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ABSTRACT

THIS REPORT DESCRIBES A PROJECT CONDUCTED BY THE CENTER FOR COORDINATED EDUCATION WHICH ATTEMPTED TO TRAIN MORE THAN 500 INSERVICE TEACHERS TO TEACH SELECTED COGNITIVE SKILLS TO SOME 15,000 STUDENTS RANGING FROM GRADES 1 THROUGH 10. THE THREE ELEMENTS INCORPORATED IN THE TRAINING PROGRAM WERE (1) A SPECIFIC TEACHING TASK (THE DEVELOPMENT OF SIX PRODUCTIVE THINKING SKILLS); (2) A SERIES OF INSTRUCTIONAL MATERIALS (SIX UNITS ON CONTEMPORARY SOCIAL ISSUES); AND (3) A SET OF TEACHING METHODS OR STRATEGIES WHICH HAD WORKED SUCCESSFULLY FOR OUTSTANDING TEACHERS. OTHER ESSENTIAL CHARACTERISTICS OF THE PROGRAM WERE ITS EMPHASIS ON A SCHOOL-BASED, TOTAL-STAFF APPROACH AND ITS UTILIZATION OF A TEACHER-FACILITATOR IN EACH SCHOOL (A PRACTICING TEACHER SELECTED BY HIS COLLEAGUES TO SERVE AS COORDINATOR). AMONG VARIOUS FINDINGS OF THE STUDY (RELATED TO TEACHER LEARNING, TEACHER EFFECTIVENESS, INDIVIDUAL DIFFERENCES IN TEACHERS AND TEACHING STYLES, AS WELL AS TO THE RELATIVE EFFECTIVENESS OF THIS PARTICULAR APPROACH TO PROFESSIONAL CONTINUING EDUCATION) WERE: THAT A PRACTICING TEACHER MAKES AN EXCELLENT TRAINER OF TEACHERS, THAT CHANGING THE BEHAVIOR OF A GROUP IS OFTEN EASIER THAN CHANGING THE BEHAVIOR OF AN INDIVIDUAL, AND, MORE GENERALLY, THAT THE IMPOTENCE OF MUCH INSERVICE EFFORT IS ATTRIBUTABLE NOT SO MUCH TO TEACHER RESISTANCE AS TO THE INEFFECTIVENESS OF EDUCATIONAL SYSTEMS USED. (JES)

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A Study On The Continuing Education Of Teachers

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Preliminary Note

For some time now, the Center for Coordinated Education has made an intensive study of the problem of teacher inservice education. Most recently, the Center tested an experimental program in professional growth in selected schools across the nation. The conclusions set forth here result in large measure from the insights acquired in the study.

It would have been impossible to derive these ideas without the support and commitment of the many teachers and principals in the twenty-seven school districts which participated in the study. But the real warriors in the cause were the teacher-facilitators, the individuals in each school who not only supplied the program with energy and leadership, but who also helped to analyze the connections between cause and effect. Their efforts to improve our understanding of an important educational problem are gratefully acknowledged.

LJR

A Study On The Continuing Education Of Teachers

I

This report describes a project carried on by the Center for Coordinated Education. The project dealt with the continuing education of teachers now in service. It was spawned—in the main—by three convictions: first, the revitalization of the nation's teaching force will be crucial in the period ahead because of the inevitability of social change; second, it is likely that we are on the verge of gaining a better understanding of the interaction between teaching and learning and thus will be in a position to make substantial improvements in the quality of teaching that goes on; and third, our knowledge of the mechanics for increasing the professional competence of educators is alarmingly inadequate.

As my bias may repeatedly show, I am convinced that *the improvement of schooling can be achieved only through the people who operate the schools.* The potential of a good textbook, a fine teaching method, and an instructional

"our society has never acknowledged the true worth of a good teacher."

computer are easily lost when they are used either inappropriately or lethargically. As a result we are faced with several formidable tasks. Apart from the obvious need to acquire effective teaching techniques and to become skillful in assisting teachers to master them, we must nurture a lasting desire for self-betterment among educators as well as a more optimistic vision of what a great educational system can accomplish.

Teaching, admittedly, is a job rather than a missionary calling. Nonetheless, one can come at the job in different ways. Perhaps because of a burgeoning technology, perhaps because bureaucratic rigidities often dissipate human incentive, or perhaps because our society has never acknowledged the true worth of a good teacher, there is an abiding danger that the classroom may become a place of organized routine rather than a place of excitement. There is a place for exactness in moving systematically toward the teaching goal. But there also is a place for the spontaneity that occurs when a perceptive human responds intuitively to the needs of a child. To achieve one of these at the expense of the other would be senseless. Yet political walls, dividing the two camps, are already taking shape. In John Gardner's memorable phrase, our schools have indeed suffered from unloving critics and uncritical lovers.

We must find a viable way for teachers to keep abreast of the changing times and to extract benefit from the new knowledge that research manufactures. There is no logical reason why a teacher or a principal cannot, day by day, become a bit more adept. That he does not always do so is

testimony to our failure to sustain his interest and to provide him with a reasonable opportunity to grow. The strong will to be a better teacher which often overshadows whatever else is lacking cannot, in the long run, overcome a system which does not take professional growth seriously enough to provide for it.

Finally, as our study demonstrated, educators, in the last analysis, must be responsible for their own strengths and weaknesses. Programs can be organized, training procedures can be prescribed, standards can be set, and performance can be assessed. Ultimately, however, *we must have teachers who are self-directive,* who participate in the organization of their own improvement. The education of spirit as well as mind stems from the kind of encounter which takes place between teacher and child, and if teachers are trained only to be obedient to prescriptions, the encounters they engage in with their students will be stale and importunistic. As has often been noted, the difference between training and education is that training decreases the person's options whereas education increases them. Thus while instructional technology——the specification of means and ends in teaching——has a very great deal to offer, it is at the mercy of the human element. We can never overcome the need for a human teacher with sound judgment, imagination, and the desire to help children learn.

"we can never overcome the need for a human teacher"

As the report suggests, all of this is not to say that there can be no precision in education; rather it is to suggest that we must invent, test, and circulate the best methods we can, recognizing, however, that in teachers as well as students, only authentic learning will alter behavior.

II.

In the making of a teacher, it is highly probable that inservice training is infinitely more important than preservice training. In most instances, the preservice preparation of a teacher cannot anticipate what life in a particular classroom will be like. Nor does it equip a teacher to keep pace with rapid social and technological changes affecting education. Moreover, because of our limited understanding of the nature of teaching, and because of the great diversity of goals teachers try to accomplish with their learners, preservice training rarely enables a teacher to accomplish a specified mission with guaranteed outcomes. We might say that in preservice training the teacher learns *about* teaching and it is only later, in the reality of the classroom, that he actually learns *to teach.*

"inservice education is unlearning as well as learning"

Our study of inservice education programs gave rise to this conclusion: *the first two years of a teacher's experience are the most crucial.* During this early period attitudes and beliefs are shaped, good and bad habits are acquired, and the basic characteristics of a teaching style are established. Beyond this point in the teacher's career, inservice education becomes a matter of unlearning as well as of learning. The evidence seems to suggest that teachers cannot learn to teach until they begin to work with children who are learning; it is in these first interactions that a fundamental sense of purpose and method is born. As a general rule, the beginning teacher strives mightily to perform well and to accomplish his pedagogical ambitions. Unhappily, false perceptions serve these strivings as well as good ones. Teachers do not become

what by theory they are meant to be; they become what their experiences make them. Thus, a teacher convinced by a defective early experience that a class of children can learn in one way only——or not at all——presents a more formidable training problem than a teacher whose mind has not yet been set.

"to improve teaching it is necessary to analyze performance"

The formula for teaching competence involves three primary ingredients: knowledge of the ideas which are to be taught, a mastery of teaching tactics which are most often successful, and a valid system of beliefs about what the child is like and what he can do. Because these ingredients are distinct and derive from different elements, they must be treated separately in the training program. We found in our research that the more precise our training objective the greater the likelihood that we and the teachers would succeed. Despite their distinct natures, however, the three components blend together as the teaching goes on. To improve teaching, therefore, it is necessary to analyze performance in order to deal with a particular component, but it is most important to then fuse the components into an effective teaching style. The teacher who lacks a knowledge of the subject, or a good teaching technique, or an understanding of the learner's nature is disabled, but so is the teacher who lacks the capacity to meld these together in a unified teaching thrust.

The implications for the professional growth of teachers seem clear; programs designed to enhance the teacher's effectiveness must attack a specific objective and produce a demonstrable ability to perform this facet of the teaching

"we need a complete teacher"

task. We cannot develop a skillful teacher if we do not attend to such practical matters as managing a classroom, teaching a lesson, testing for achievement, and relating to children. But beyond this, the programs must also ensure that all of these objectives are amalgamated into a meaningful force that is aimed at the largest ends toward which education must strive. Even if the teacher is technically adequate, unless he has a sense of the social reconstruction the society needs, and unless he is committed to making an authentic improvement in the lives of his students, he does not offer much more than the teaching machines that are on the way. We need, in sum, a complete teacher.

In our experiments we learned that there is no such thing as a universal method of teaching education. A training method, whatever its excellence, may not fit every situation. There are invariably many different ways in which a training goal can be achieved. More often than not, one of these ways is more appropriate for a particular situation than another. We discovered, for instance, that teaching conditions throughout the nation vary far more than most of us think. These variations in the teaching environment usually mean that one procedure will succeed and another will fail.

It was within this context that we sought to answer some questions about the inservice education of teachers. We wanted to learn, for instance, whether teaching strategies that work well for one teacher can be used effectively by other teachers. We wanted to determine also whether teachers can practice new instructional skills while they are on the job. And we wanted to know whether the elements of good

teaching referred to earlier could indeed be developed simultaneously in a cohesive training program.

III.

To get at these questions we needed three things: (a) a set of teaching strategies which could serve as training objectives (b) a teaching task which could provide an opportunity to practice these strategies (c) an inservice growth program which would provide the time, incentive, and technical assistance necessary for a rapid mastery of the strategies. We began by selecting the teaching task——teaching children to use six productive thinking skills: (1) retrieving information from a source (2) analyzing and classifying the information (3) formulating generalizations from the information (4) using generalizations to predict unknowns (5) using generalizations to explain events (6) verifying predictions and explanations.

We then asked a number of highly-regarded teachers to work on the task and to invent the best teaching strategies they could. These strategies were later rated by comparing the accomplishments of each teacher's students. We inferred, in effect, that a good teaching method would produce high student achievement. Ultimately, the best of the tested methods were organized into a kind of model system for teaching the skills of productive thinking.

"one can think productively about anything from allegories to zebras"

It was obvious that if we wished to teach children to think we would have to give them something to think about: one can think productively about anything from allegories to zebras. It was necessary therefore to select some subject-matter which was suitable for our purpose. We chose to teach about six contemporary issues: poverty, law and order, racism, hate and violence, segregation, and cultural diversity. The choice was somewhat arbitrary, but was based chiefly on the social significance of the topics and their relatively limited emphasis in most social studies curricula. We prepared a short teaching unit on each of these social problems for first, fourth, eighth, and tenth grade students. The use of multiple units at different levels of difficulty permitted us to teach the same topics and cognitive skills to students in all grades; second-grade children used the first-grade units, ninth-graders used the eighth-grade units, and so on. Finally, we incorporated one of the six productive thinking skills in each of the units on social issues. Thus we acquired the three elements which were essential to the experiment: we had a specific teaching task (the development of children's cognitive skills), a series of instructional materials (the six units on contemporary social issues) and a set of teaching methods which worked successfully for outstanding teachers.

Two critical questions remained: could we train a great many teachers to use these methods, and could we design a program of teacher professional growth which would be effective and yet stay within the conditions that were imposed by realities of the school's operations? One condition, for example, was that the program be

economically feasible. With the strained budgets of most school districts there was little point in developing a system that was financially prohibitive. We also wished to avoid adding to the burdens of the school principal. Still another condition was that we wished to involve as many teachers on the school staff as we could. And, of greatest importance, we wished to design a program with sufficient flexibility to permit us to shape it to the environment of the particular school, and to accommodate the individuality of each teacher.

It was our belief that a school-centered approach to professional growth would necessitate an on-site agent, someone able to manage the program of self-developments. Moreover, we felt, on the basis of previous work, that the school principal could not serve this function. The need to achieve stability amidst change normally presents the building administrator with a difficult role conflict. Moreover, experience has led us to suspect that one person cannot proficiently serve as the *permanent* changemaster in a school. Consequently, in our study, a teacher selected by his faculty colleagues and given special leadership training, was used as the training agent. The results were extremely impressive——so much so, in fact, that we now conjecture that *a practicing teacher is the best possible trainer of teachers.*

"a practicing teacher is the best possible trainer of teachers"

For want of a better name we chose to call these teacher-leaders, facilitators. They provided us with some of our most striking successes. Their value was heavily endorsed both by the teachers and the principals. All participants in

the experiment seemed to agree that a teacher-facilitator, freed from teaching responsibilities for a part of the day, is a potent asset to a staff's professional growth.

Prior to the operation of the experimental program the facilitators gathered in Santa Barbara for a preparatory seminar. They learned, first of all, to use the teaching strategies themselves. They also were familiarized in a crude sort of way with some of the elementary principles of group dynamics, with devices for the diagnosis of teaching errors, and with other information which might enhance their leadership capability. Once they returned to their schools, the facilitators, working under the jurisdiction of their principals, assumed total responsibility for the operation of the professional growth program.

IV.

These steps launched a three-month effort in which we attempted to train more than 500 teachers to teach cognitive skills to some 15,000 students. The model teaching strategies were communicated to these teachers through film clips, through live demonstrations by the facilitators, and through a series of printed materials prepared by our Center. The teachers in the experiment had one of three options: the model teaching strategy could be used as recommended; it could be altered in any way the teacher wished; or it could be rejected and an entirely different method of the teacher's

choice used instead. We were prompted to offer these options for two reasons: first, we wanted to learn something about the importance of teaching autonomy and individuality of style; and second, we wanted, if we could, to see if there was any relationship between a teacher's personality, teaching background, work environment, and his willingness to use a specified teaching method.

Using specially constructed tests, we rated each teacher's ability to teach the productive thinking skills at the start of the experiment. We also tested the teacher's students in order to assess teaching effectiveness. Three months later, the teachers——and their students——were again tested and the results of the two assessments compared. We also video-taped the teachers during both testing situations in order to make additional analyses. Through the use of judgmental ratings, we were able subsequently to estimate the extent to which the teacher had (a) accepted (b) modified, or (c) rejected the recommended strategy.

"changing the behavior of a group is often easier than changing the behavior of an individual"

We found that much is gained when the elements of *good teaching——knowledge of subject, knowledge of teaching method, and knowledge of child——are integrated into an appropriate training mix.* Thus a program which seeks to develop a particular teaching skill ought, at the same time, to incorporate the related theoretical ideas. In this way the practical benefits of the program are extended and the chances of permanent behavioral change are increased.

We found, too, that where professional growth is concerned, changing the behavior of a group often is easier

than changing the behavior of an individual. For the purposes of the study, as a prerequisite to participation, we stipulated that the total faculty of an elementary school or the entire department of a secondary school take part in the program. As a result, we learned that while a good program of teacher improvement can be carried on almost anywhere where there are children to be taught, training programs which involve the total school staff, and which are tailored to the requirements of the school's circumstances, offer several advantages.

"any school can arrange for the professional growth of its teachers"

For one thing, teachers who are engaged in a common pursuit tend to reinforce one another. For another, the participation of the entire faculty serves as a tremendous stimulation to staff interaction in general. In our study, for example, the teachers spent a good deal of time (many for the first time in their professional careers) talking about the comparative advantages of different teaching methods. In addition, the involvement of all the faculty makes it much easier to provide time for professional growth while the school is in operation.

Through teacher teaming, large-group instruction, teacher aides, and other devices, we tried to achieve approximately ten hours a month during which the teacher could engage in professional growth activities. This growth time took place during the school day and was not rewarded with extra pay, with increments on the salary schedule, or with any other extrinsic benefits. The scheduling problems were difficult but not insurmountable. *Any school can, if it wishes, arrange for the professional growth of its teachers as a regular part of the work load.* Although this facet of the

experiment was not problem-free, the instances in which we did acquire on-the-job growth time without undue difficulty, particularly in situations where team teaching already was in existence, suggest that with further efforts a viable method of combining service with growth might be devised.

"a good method works well for most but not all teachers"

V.

In the study we tried to find a relationship among some of the more important variables which might affect teacher growth. We discovered that a good teaching method seems to work well for most but not all teachers. Occasionally the method fails because of the characteristics of the teacher: more often, however, it fails because of the characteristics of the learner. Two-thirds of our experimental schools were white, middle-class and suburban. The remaining third was minority, lower-class and urban. Interestingly enough, we found that where the teacher had a strong desire to perform well, the disadvantaged children were able to learn virtually everything that the advantaged ones did. Frequently, however, the disadvantaged children needed different kinds of teaching methods as well as more time. The findings suggest that although teachers are a good deal more effective when they have alternative strategies with which to teach a given lesson, each of these strategies must be acquired systematically and each must be perfected through cumulative practice.

Not only have we been able to transfer the teaching methods of an outstanding teacher to other teachers with surprising facility, but we have found most teachers to be extremely receptive to any instructional procedure which demonstrates tangible advantages. This receptivity becomes even stronger when the teacher's intrinsic desire to do well is bolstered through some form of extrinsic motivation. The variation in the achievements of the schools in the experiment made this point abundantly clear: *Inservice education is virtually useless if the objectives of the training program are not valued, and rewarded——if with nothing more than esteem——by the power structure of the school.* Teachers, in the main, do not use capabilities which lack a pay-off. This is especially true when the training objectives are difficult, time consuming, or plain hard work. The extent to which teachers perceptions of their role are influenced by organizational expectations constitutes another benefit to a school-based approach to teacher growth. Administrative support and encouragement is most easily and most forcefully conveyed within the sub-culture of the particular school.

"the matter of incentive is crucial"

Our analysis of the teaching performances indicated that *there is a vast range of difference between the poor teacher and the good one.* It is not uncommon in a school to find a few teachers to be far less effective than the others. Here again, the collaborative involvement of the total staff appears to offer secondary benefits since the teaching tactics of very able teachers are shared more widely.

The matter of incentive, as in all human endeavor, is crucial. We cannot assume that teachers will perform at their

highest level anymore than will professors, bricklayers, or surgeons. The fact that the teachers who were most enthusiastic about the growth program achieved the mastery of the teaching strategies led to two other conjectures: teachers are not likely to teach their best if, for one reason or another, their confidence in what they are doing is diminished; and, when their confidence is high, teachers are capable of impressive ingenuity and potency. Where we were able to kindle a spark of excitement in teachers they gave of themselves to a far greater extent that was their habit. This spark of excitement, moreover, often ignited a latent creativity. There were instances, for example, where our materials were late in reaching the teachers. Confronted with a need, and "turned on" by their excitement, many teachers invented activities which were superior to the ones we had designed for them. One teacher, for example, "segregated" left-handed children and placed them in a "ghetto" in the back of the room. Another, working with third-graders, brought two plants to class. One plant was given sunshine, nutrients, ample water, and tender care. The other was placed in a dark corner and ignored. When it died an eight-year-old observed, "The Negro is dead." It is sad that we have so often led teachers to doubt their own capacities and to rely so heavily on the prescriptions of "experts". The corrosive consequences of dependency are widely apparent in the fear of self-direction that characterizes many teachers.

"teachers are individuals and their styles vary"

Teachers, of course, are individuals, and their styles do vary. It is also true that the nuances of the classroom require the teacher to readjust the instruction as often as the situation requires. Nonetheless, artistry and individuality

need not be retarded by the availability of a good method: ideally, a good point of departure should spur them on to greater gains. Put another way, a useful teaching strategy does not inhibit autonomy: properly used, it directs and stimulates effective as well as imaginative teaching.

"teachers learn at different rates, in different ways, and through different experiences"

Not only is there considerable contrast in the achievement of the teachers on a faculty, but there are highs and lows in the performance profile of even the very good ones. Good teachers are not uniformly good at everything they do. This is hardly a revelation; but the spread of ability difference among teachers——and within the skill repertories of individual teachers——was a jolt. We found that teachers, as other observers have also noted, tend to play-up that at which they are adept and to play down that at which they are not. Moreover, the routine of the classroom normally permits teachers to decide for themselves what they wish to emphasize in their teaching. This combination of circumstances makes it unlikely that teachers, any more than lawyers, physicians, and professors, will, as a matter of course, overcome their more pernicious deficiencies. Since they have some control over what they do, it is usually simpler to ignore areas in which one is weak than to suffer through the weakness. *There does not seem to be any way to escape the need to individualize teacher inservice education.* Like their students, teachers learn at different rates, in different ways, and through different experiences.

We attempted to discover whether it was personality, his professional background, his attitudes regarding education, or the setting in which he worked that had the greatest effect on

his response to the retraining opportunity. We were unable to establish any significant correlations; we found almost no connection between these factors and either receptivity to, or success in, the growth activities. It may well be, of course, that we worked with the wrong criteria with respect to the variables. It may also be that the correlations we sought were there, but were not illuminated by the statistical procedures we used. Despite this initial failure, subsequent attempts to establish similar correlations should, in my judgment, be made. For in view of the importance of individualizing teacher retraining, it would be a tremendous advantage to be able to design growth programs which accommodate the teacher's technical needs, his idiosyncratic way of learning, and his personal aspirations.

The facilitators, each of whom kept anecdotal records of the experimental program, leaned heavily toward the hunch that the environment in which the teacher must operate is of greater influence on his desire to improve professionaly than any of the other variables we tested. This hunch seems to be supported by the fact that some of the schools in the experiment responded to the program far better than others. This result was puzzling and we tried to determine what accounted for it.

"schools have a collective staff personality"

My surmise, at the present time, is that schools have what might be termed a "collective staff personality." Although faculties are composed of individuals, as a group they tend to develop a kind of collective outlook on professional behavior. This outlook, encompassing the morale, the sense of purpose, and the goals and ambitions of

the staff, is of considerable significance. It affects what the teachers will value, how they will work and how hard, and their faith in the children they teach. When new teachers join the staff they gradually "take-on" this personality. Its impact is sufficiently great to make each school faculty a unique social group. These groups differ from one another so much, moreover, that their impact on the teacher may have more to do with shaping the teacher's behavior than the whole of his pre-service training. The power of this same peer-group influence, it might be added, further supports the notion set forth earlier: teacher behavior may be easier to change in groups than individually.

"the learning of a new technique often is uncomfortable"

The school principal is by far the greatest influence on the staff's personality. Through the causes he espouses, the kind of teaching he encourages, and the staff behavior he rewards and sanctions, the environment which characterizes the school is set. We do not now know, unhappily, very much about how this phenomenon works; despite our limited understanding, however, it would seem that the easiest way to alter a staff's attitudes, at least with regard to its interest in professional growth, is to use the principal as the motivating agent.

Professional growth, particularly when it involves the exchange of old teaching habits for new, breeds considerable insecurity. Old habits are comfortable, predictable, and anxiety-free. The learning of a new technique, in contrast, often is uncomfortable. In the early stages there may be a marked lack of success. As a consequence, we found it imperative to sustain the teacher with repeated

encouragement and to provide evidence of progress as often as we could. When a teacher is trying to master a new technique, sustaining persistence is crucial; to do this we relied heavily on the *facilitator.* Next to self-criticism, criticism by a trusted peer seems to be most easily tolerated by teachers. The importance of a "feed-back" mechanism, demonstrated in a number of other studies, was confirmed by our findings. We also found, however, that in the case of many pedagogical skills the need for a human coach——who both observes and interprets——is unavoidable.

"the need for a human coach is unavoidable"

The capacity of the teacher-facilitator to stimulate and support behavioral change far exceeded our expectations. In previous experiments we had used school administrators in a facilitator role. Administrators obviously can mandate some kinds of professional behavior through threat and coercion. By comparison, however, the teacher-facilitators were infinitely more successful. Apparently, the presence of a peer who has both empathy and trust is a powerful force in encouraging behavioral modification. It is not so much that the facilitator serves as a change master, for much growth can be self-directed: it is, rather, that he serves as an ever-present symbol of the improvements which are expected.

The particular maneuvers which account for a facilitator's success are as yet not completely understood. Different individuals used different tactics with equally good results, suggesting that there are many ways to ply the art of facilitatorship. In general, however, our most successful facilitators were characterized by a quality of openness, by an obvious interest in the progress of each person with whom

they worked, by the ability to respond spontaneously to "facilitating" opportunities when they arose, and by a belief in their own role. Since they were selected by their faculties they had an advantage in that they felt they could legitimately expect reasonable cooperation. Nonetheless, their personal commitment to the program and their faith in its value seemed highly contagious.

"teachers respond in proportion to the value they perceive"

Our previous work had shown that teachers respond to an improvement program in proportion to the value they perceive. While such perceptions of worth may or may not be accurate, in either case they condition people's attitudes. It is usually possible to demonstrate the benefits of a sound improvement program but the matter should not be left to chance. In the present study we deliberately chose a structure which would have high appeal. Had our training objectives seemed of less merit to the teachers, the facilitators, I believe, might have encountered greater difficulty.

We had anticipated that length of experience would correlate negatively with receptivity to change, reasoning that a longer professional experience would result in greater rigidity. Our results did not bear this out. We found no connection between age, length of experience, biographical history, and enthusiasm for the training program. As a matter of fact, we were astonished to find that several teachers who were in the last year of their professional service were among the most enthusiastic and most successful in mastering the new teaching strategies. We also found that teachers, as a whole, are remarkably open to new methodology——and even hungry for it. *It may well be, therefore, that we have greatly*

overestimated teachers' psychological resistance to change. Given a legitimate objective, adequate opportunity, and good reason to achieve it, teachers seem to respond with unsuspected eagerness.

VI.

In many of our schools the operation of the growth program achieved a number of incidental benefits merely by its presence. These benefits were related primarily to teacher attitude. Seemingly, the existence of a training program caused teachers to think seriously and deliberately about their teaching. As we worked with teachers the analogy of the Sunday golfer came to mind. Some players accept their score as immutable and make no attempt to improve their skills. They may play for fun, for exercise, or for companionship, but better performance is not an active goal. If, for some reason, improvement does become a concern, the resulting focus of attention and effort will in itself cause them to improve.

Something akin to this happened with many of the teachers. The possibility of using different methods of instruction coupled with faculty-wide interest drew attention to alternatives and led teachers to examine and appraise their own teaching habits.

"technique alone does not produce great teaching"

We found, too, that a mastery of technique alone does not produce great teaching. The complexities of the classroom being what they are, programs of professional growth will need to reckon with teachers attitudes and feelings as well as with methods and information. There are teachers, for example, who, although technically proficient, are impaired by their mental set regarding the children with whom they work. Similarly, there are teachers who relate easily to their students but who lack the skills for introducing a lesson or who simply do not know enough about their subject. To return to the analogy of the golfer, a player will not do well unless he has mastered the use of each of his clubs. Such mastery can be acquired through training and practice. Once these have been mastered, however, other problems remain. The player must, for example, learn to adjust to the conditions of the course. And, ultimately, all of the separate skills must be conjoined into a potent action by the psychological attitude the player brings to his endeavor.

So it is with teaching. Substantive knowledge, instructional finesse, and interpersonal skills must be welded together. *If we fail to attend to the teacher's emotions as well as to his mind, we will again blunder.* This interplay of the ingredients of good teaching is critical. In our study the best teaching performances were recorded not by the teachers who knew the most, who were the most clever instructionally, or who felt most warmly toward their students; they were recorded by teachers who had an optimum blend of these characteristics.

It may be that such an optimum blend is not in every case possible. If this is so, we will need to decide which

teaching skills should have the highest priority, and we will need to find ways to exploit the individual teacher's unique strengths. Not only will such a task stretch our minds, but when it comes to implementation, the encumbrances of procedure will be formidable. But, the difficulties notwithstanding, there may be no other way to acquire maximum productivity from our teaching force.

In sum, the study did not achieve anything spectacular. Nevertheless, some breakthroughs were apparent here and there. It seems clear that teachers can continue to improve themselves as long as they serve in classrooms. When conditions are right, moreover, such improvement can take place while the teacher is at work with his students. It also seems clear that it is quite possible to diagnose teaching weaknesses and to organize corrective programs. The great need in this connection is that we become a good deal more proficient at both of these pursuits. *We must find efficient yet easily managed devices with which to diagnose an individual teacher's professional requirements: and we need to become adept at the design of improvement experiences which are specifically addressed to these requirements.*

"we will need to find ways to exploit the individual teacher's unique strengths"

Where significant professional growth took place, the gains were often dramatic. It is interesting to note in this regard that in many cases the mastery of a technique leads to a change in role perception. As a teacher becomes adept at, say, teaching children to reason inductively, he begins also to regard such teaching as valuable. In short, the ability to teach something extremely well is in itself a high intrinsic motivation. With an appropriate system, then, we believe it is

"if we can find the right formulas we may make a profound difference"

possible to achieve substantial improvement in the teaching that goes on. The teacher in service learns with a good deal more facility than we sometimes believe. Occasionally, the speed of his growth is phenomenal. Perhaps because so little is really known about the best way to teach something, teachers generally are quite willing to experiment with new teaching techniques. Understandably, this interest is highest when the new techniques do not increase the work load unduly. However, even when a new technique demands a great effort, teachers are likely to respond favorably if the benefits are readily apparent. Conversely, they are likely to resist any new method in which the advantages are unclear.

One must conclude that the impotence of so much of our inservice effort is attributable, not to teacher resistance, but to the ineffectiveness of the systems we use. The potential of inservice education, as a consequence, would seem to be great: if we can find the right formulas we may well make a profound difference in the quality of schooling.

CENTER FOR COORDINATED EDUCATION

The Center For Coordinated Education is interested in school improvement. Supported by a grant from the Ford Foundation, it seeks––through practical experiments in schools––to learn more about the improvements that are needed and the processes through which they can be achieved.

To improve something is to make it better. Schools are complex institutions, however, and their improvement rests on four elements: knowing the way things are, knowing what would be better, knowing how to make them better, and wanting to make them better. The Center is interested chiefly in the improvement process as it bears upon the instructional program (what is taught and how it is taught), the professional growth of personnel (procedures and events which make teachers and principals more effective), and the organization of the school (conditions within the school that help the teacher to teach and the child to learn).

The present series of projects reflects four predominant ambitions: to develop sample curriculum materials which acquaint learners with the more important aspects of our societal malais; to test teaching methods which enhance the achievement of students in general and the achievement of those from minority sub-cultures in particular; to explore new approaches to school staffing which offer time and incentive for professional growth; and to experiment with a system of teacher growth which is feasible, practical, and potent.

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